(i) illuminating said *mxn* compartments on said patterned electrode with a predetermined light pattern to maintain the position of said bead arrays in accordance with said predetermined light pattern and the pattern of *mxn* compartments; and

H Cont'd

(j) positioning said top electrode closer to said electrode thereby fusing said *mxn* droplets into a continuous liquid phase, while maintaining each of said *mxn* bead arrays in one of the corresponding *mxn* compartments.

## Remarks

Claims 129-174 are pending the application. Claims 152-153 have been withdrawn from consideration by Examiner as being non-elected. Thus, claims 129-151 and 154-174 are currently presented for examination.

In response to the election of species requirement, applicants elect the species of claim 129 wherein the components have the structure -NH-CHR$_1$-CO-, and wherein R$_1$ is methyl. The following are the claims under consideration which read on the elected species: 129-151 and 154-174.

Claim 173 has been amended to correct an inconsistency between the designation of the solid support material in the claim. The occurrences of "particle" have been replaced with "bead".

Examiner has remarked that claims 172 and 173, added by the last amendment, appear to be "different from the claimed invention". Examiner has requested clarification. However, Examiner has not articulated *why* she believes that claims 172 and 173 are directed to subject matter "different from the claimed invention". By "different from the claimed invention", it is

assumed that Examiner means different from the claimed invention of the base claim, *i.e.*, the invention of claim 129.

Claim 129 is directed to a method for identifying a compound of interest in a library of compounds by placing one or more tags on each of a multiplicity of solid supports during each coupling step in the course of "Divide, Couple and Recombine" (DCR) combinatorial synthesis. The chemical identity of the compound synthesized and displayed on each bead is thus uniquely encoded by the tag. An assay is performed on the library of bead-bound compounds for a property of interest. Decoding of the code composed of the one or more tags, to identify the compound associated with the codes, is carried out by *in-situ* optical interrogation of the tag(s). The decoding step is carried out without isolating the solid support comprising the compound having the property of interest from other solid supports, and without detaching any of the tags(s) from the solid support comprising the compound having the property of interest.

According to one embodiment, the solid supports are beads. The tag decoding step comprises collecting spectral fluorescence data for each bead, to identify the compound having the property of interest. Collection of spectral fluorescence data includes obtaining a fluorescence image for each bead.

Claim 172 recites the feature of forming the beads into a planar array adjacent to the planar walls of a sandwich flow cell. Claims 172 further recites controlling bead movement by light-controlled electrokinetic means. The features of claim 172 are not inconsistent with the elements of the base claim, claim 129. In particular, the step of arranging the beads in a planar array in a sandwich flow cell for decoding is not inconsistent with decoding *without isolating the bead comprising the compound having the property of interest from other beads*. While the

positions of individual beads may be changed in forming the array, the beads remain part of the large collection comprising the array. They are not "isolated" from ther beads in the array.

The features of claim 172 are not inconsistent with the elements of claim 129, or any intervening claim. Claim 172 is a proper dependent claim, and is properly directed to the invention of the base claim, claim 129.

Claim 173 is directed to an embodiment of the invention wherein spectral fluorescence data for bead decoding is collected from a spatially encoded array of beads, at the interface between an electrode and an electrolyte solution. Again, the fact that the beads are provided in an array, even a spatially encoded array, is not inconsistent with claim 129 feature of decoding a bead of interest without isolation from other beads. Each bead remains part of the larger collection comprising the array during decoding, and is not removed from the array.

The features of claim 173 are not inconsistent with the elements of claim 129, or any intervening claim. Claim 173 is a proper dependent claim, and is properly directed to the invention of the base claim, claim 129.

Respectfully submitted,

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**APPENDIX A: Mark-up f claim amended**

173. **(amended)** The method of claim 170, wherein spectral fluorescence data are collected for the bead array by initially forming a spatially encoded array of beads at an interface between an electrode and an electrolyte solution, comprising the following steps:

(a) providing an electrode and an electrolyte solution;

(b) providing multiple types of [particles] beads, each type being stored in accordance with chemically or physically distinguishable [particle] bead characteristics in one of a plurality of reservoirs, each reservoir containing a plurality of like-type [particles] beads suspended in said electrolyte solution;

(c) providing said reservoirs in the form of an *mxn* grid arrangement;

(d) patterning said electrode to define *mxn* compartments corresponding to said *mxn* grid of reservoirs;

(e) depositing *mxn* droplets from said *mxn* reservoirs onto said corresponding *mxn* compartments, each said droplet originating from one of said reservoirs and remaining confined to one of said *mxn* compartments and each said droplet containing at least one [particle] bead;

(f) positioning a top electrode above said droplets so as to simultaneously contact each said droplet;

(g) generating an electric field between said top electrode and said *mxn* droplets;

(h) using said electric field to form a bead array in each said *mxn* compartments, each said bead array remaining spatially confined to one of said *mxn* droplets;

(i) illuminating said *mxn* compartments on said patterned electrode with a predetermined light [patter] <u>pattern</u> to maintain the position of said bead arrays in accordance with said predetermined light pattern and the pattern of *mxn* compartments; and

(j) positioning said top electrode closer to said electrode thereby fusing said *mxn* droplets into a continuous liquid phase, while maintaining each of said *mxn* bead arrays in one of the corresponding *mxn* compartments.